DAM INSPECTION REPORT

HILDEBRANT DAM

Dam Inventory MS03868

Desoto County, MS

October 31, 2019

Prepared for:

Charles Hildebrant
379 Robertson Road South
Hernando, MS 38632

Prepared by:
John S. Wilson, P. E., LLC
895 Swinnea Lake Drive
Southaven, MS 38672

Formal Inspection Checklist
(For Engineers)

DAM NAME:

DAM INVENTORY NO: MS

OWNER:

Land Owners Name (Per Deed): **Charles G. Hildebrant, ET UX**

Address: **379 Robertson Road South, Hernando, MS 38632**

Phone #: **662-449-4493; 901-262-1795**

Email: **chuckhild@aol.com**

Primary Contact Person (if different from above):

Address:

Phone #:

Email:

OPERATOR (if different from Owner):

Name:

Address:

Phone #:

Email:

DATE(S) OF INSPECTION: September 13, 2019 and October 31, 2019

INSPECTION PERSONNEL (include contact information)

Mississippi Licensed Professional Engineer(s):

Name	Affiliation	Area of Expertise
Steve Wilson	**John S. Wilson, P.E., LLC**	**Dam Design and Construction**

MULTIDISCIPINARY: I am experienced in the technical disciplines or I am working with other professionals experienced in the technical disciplines to properly inspect this dam and appurtenant works. Technical disciplines, in additional to the general civil engineering, may include geotechnical, geological, hydrologic, structural, and mechanical.

☑ Yes ☐ No Comment:

Other technical expert(s) and advisors(s):

Name	Affiliation	Area of Expertise

State Representative(s):

Name	Affiliation

Dam Owner Representative(s):

Name	Affiliation
Charles Hildebrant	**Owner**

Others:

Name	Affiliation

GENERAL INFORMATION

Weather Conditions (including rainfall within previous 14 days): **Clear and warm, 5" rain in last 14 days**

County: **Desoto**

Stream Name: **Unnamed tributary**

Tributary of: **Hurricane Creek**

Latitude (N):**31°51'17.6"**

Longitude (W): **90°01'13.73"**

Purpose of Dam: **Recreation**

Hazard Classification: **High**

Drainage Area (sq. mi.): **0.06**

Height of Dam (ft): **21.5**

Length (ft): **430**

Normal Surface (ac): **8.9**

Normal Capacity (ac-ft): **56**

Maximum Surface (ac): **11.1** Maximum Capacity (ac-ft): **79**

Normal Reservoir Elevation (ft): **322.2**

Reservoir Elevation at time of inspection (ft): **321.0**

SPILLWAY SYSTEM

Type of spillway (riser and conduit, concrete chute, vegetated earthen, etc.)

Principal: **Earthen – single spillway**

Auxiliary (Emergency): **None**

Principal Spillway Capacity (inches/24 hours & storm distribution): **165 CFS 24 houra -MDEQ Distribution**

Auxiliary (Emergency) Spillway Capacity (inches/24 hours & storm distribution): **N/A**

Note: If you do not understand what is meant by the above questions please engage the services of a professional who can assist you. These questions are not meant to capture the spillway capacity in cfs, as this data is irrelevant in determining the dams overall ability to pass the extreme precipitation event (% of the PMP) as required by the Regulations. If there are more than two spillways, please add an additional item. **A formal inspection will not be approved by the Dam Safety Division unless this section is completed.**

Are the spillway(s) adequate for this classification of dam (see the dam safety regulations 11 Miss. Admin. Code Pt. 7, Ch. 3 for definition of Probable Maximum Precipitation – PMP – and what amount of PMP must be handled by the different spillways)?

Principal: Yes ☐ No ☑

Auxiliary(Emergency): Yes ☐ No ☐

If not, what percent of the total PMP will the combined spillways pass (%)? **75%**

Or, note date and author of hydrologic and hydraulic report evaluating spillway capacity: **see sheets 21 and 22**

Major changes to the dam or watershed since preparation of last report that may affect spillway adequacy? (Yes / No, if yes then describe changes): **No**

HISTORY

Date Constructed: **Prior to 1962** Date(s) Reconstructed:

Designer: Constructed by:

PREVIOUS INSPECTIONS (date of)

Last Owner's Inspection: **Unknown**

Last Formal Inspection: **November 18, 2015**

EMERGENCY ACTION PLAN

Date of Last Approved Plan (when the plan was last distributed to the EAP holders): **November 30, 2018**

Date of Last Revision: **None**

Is the notification flowchart complete and current? **Yes**

Is the emergency materials and equipment information current? **Yes**

When was the plan last tested? Was this test a table top exercise or a full scale exercise? **Unknown**

DOWNSTREAM HAZARD CLASSIFICATIONS

Present Hazard Classification: **High**

Changes in Downstream Land Use and Habitation since last inspection: **None**

Is present Classification appropriate? **Yes**

OPERATION AND MAINTENANCE

Date of Operation and Maintenance Plan: **Revised O&M Plan submitted with this inspection**

Are instructions adequate? **Yes**

Do operating personnel follow instructions? **Yes**

What are operating personnel capabilities? **Adequate experience to follow Plan**

PROJECT RECORD REVIEW

Date of file review: **October 27, 2019**

Description of previous deficiencies noted and corrective actions taken (if so, when?):

Remove trees from embankment

EXAMINATION OF EMBANKMENT DAMS

DESCRIPTION OF STRUCTURE

Embankment Material: **Earthen**

Cutoff Type (If Known): **Unknown**

Impervious Core (If Known): **Unknown**

Internal Drainage System (Yes / No?) If yes, describe: **No**

Any Signs of Movement (Horizontal and Vertical Alignment)?: **No**

Miscellaneous: **None**

CREST

Width of Crest: **14'**
Problems:
☐ None ☐ Ruts or Puddles ☐ Erosion ☐ Cracks with Displacement ☐ Sinkholes ☐ Not Wide Enough ☐ Low Area ☐ Misalignment ☐ Inadequate Surface Drainage ☑ Trees, Brush, Briars ☐ Other:

If Trees, Brush, Briars is checked above please describe the nature and extent of vegetation on the dam?
Trees and brush on/near downstream crown,

Comments:

Overall Condition:
☑ Satisfactory
☐ Fair
☐ Poor
☐ Unsatisfactory

UPSTREAM SLOPE

Slope (H:V): **3:1**

Problems:
☐ None ☐ Riprap - Missing, Sparse, Displaced, Weathered ☐ Wave Erosion-with Scarps

☐ Cracks-with Displacement ☐ Sinkhole ☐ Appears Too Steep ☐ Depressions or Bulges

☐ Slides ☐ Animal Burrows ☑ Trees, Brush, Briars

☐ Other:

If Trees, Brush, Briars is checked above please describe the nature and extent of vegetation on the dam?

Small brush and tall grass present

Comments:

Overall Condition:
☐ Satisfactory
☑ Fair
☐ Poor
☐ Unsatisfactory

DOWNSTREAM SLOPE (including groins and toe area)

Slope (H:V): **Variable 2:1 to 3:!**

Problems:

☐ None ☐ Livestock Damage ☐ Erosion or Gullies ☐ Cracks with Displacement

☐ Sinkholes ☐ Appears too Steep ☐ Depression or Bulges ☐ Slide(s) ☐ Soft Areas

☑ Trees, Brush, Briars on dam or within 50 feet of toe ☐ Animal Burrows

☐ Other:

If Trees, Brush, Briars is checked above please describe the nature and extent of vegetation on the dam?

Trees and brush present on slope

Comments:

Large, small trees and brush

Overall Condition:
☐ Satisfactory
☑ Fair
☐ Poor
☐ Unsatisfactory

UTILITIES

Utilities Installed in Embankment or Toe? **None**

☐ Phone/Cable ☐ Water ☐ Electrical ☐ Sewer ☐ Gas

Does the location of all utilities appear on the as-built plans for the dam?

SEEPAGE

Problems:

☑ None ☐ Saturated Embankment Area ☐ Seepage Exits on Embankment ☐ Seepage Exits at Point Source ☐ Seepage Area at Toe ☐ Flow Adjacent to Outlet
☐ Other:

Comments:

Overall Condition:

☑ ☐ Satisfactory (None)
☐ Fair
☐ Poor
☐ Unsatisfactory

Does the location of all drainage systems/filters appear on the as-built plans for the dam?

SEEPAGE AND TOE DRAIN/RELIEF WELL FLOW

Location	Estimated Flow	Color (Turbidity)

EXAMINATION OF SPILLWAYS AND OUTLET WORKS

PRIMARY SPILLWAY

(Fill out those sections that apply)

ENTRANCE CHANNEL

Description: **No defined entrance channel, spillway begins in reservoir area**

Vegetation (Trees, Bushes): **Side slopes only**

Debris: **Small amount of dead trees and brush, no concerns**

Channel Side-Slope Stability: **Satisfactory**

Slope Protection/Erosion: **None**

Unusual Conditions:

Overall Condition:

- [x] Satisfactory
- [ ] Fair
- [ ] Poor
- [ ] Unsatisfactory

SPILLWAY CREST

Description: **Earthen, nearly flat from reservoir to outlet ditch**

Condition of Material: **Satisfactory**

Signs of Movement: **None**

Joints: **None**

Unusual Conditions:

Overall Condition:

- [x] Satisfactory
- [ ] Fair
- [ ] Poor
- [ ] Unsatisfactory

CHUTES

Description: **N/A**

Condition of Material:

Signs of Movement:

Joints:

Unusual Conditions:

Overall Condition:
- ☐ Satisfactory
- ☐ Fair
- ☐ Poor
- ☐ Unsatisfactory

SPILLWAY WING WALLS

Description: **N/A**

Condition of Material:

Signs of Movement:

Joints:

Drains:

Unusual Conditions:

Overall Condition:
- ☐ Satisfactory
- ☐ Fair
- ☐ Poor
- ☐ Unsatisfactory

DOWNSTREAM APRON

Description: **N/A**

Condition of Material:

Signs of Movement:

Unusual Conditions:

Overall Condition:
☐ Satisfactory
☐ Fair
☐ Poor
☐ Unsatisfactory

INLET RISER

Description and Material Type (i.e. HDPE, Concrete, Steel, CMP, etc.): **N/A**

Condition of Material:

Signs of Movement:

Joints:

Floor:

Unusual Conditions:

Overall Condition:
☐ Satisfactory
☐ Fair
☐ Poor
☐ Unsatisfactory

CONDUIT(S)

Description and Material Type (i.e. HDPE, Concrete, Steel, CMP, etc.): **N/A**

When was the last video inspection of the conduit?

Condition of Material:

Signs of Movement:

Joints:

Seepage into conduit(s):

Location Estimated Flow Turbidity
Unusual Conditions:

Overall Condition:

☐ Satisfactory
☐ Fair
☐ Poor
☐ Unsatisfactory

TRASH RACKS

Description: **N/A**

Condition of Material:

Unusual Conditions:

Overall Condition:
☐ Satisfactory
☐ Fair
☐ Poor
☐ Unsatisfactory

GATES

Description/Type: **None**

Condition:

Protective Coating:

Leakage when gate is closed (Yes / No?):

Exercising Frequency:

Gates operated at time of Inspection?

Condition of seals:

Condition of gate controls and hoists:

Overall Condition:
☐ Satisfactory
☐ Fair
☐ Poor
☐ Unsatisfactory

STILLING BASIN

Description: **None**

Condition of Material:

Signs of Movement:

Erosion:

Unusual Conditions:

Overall Condition:
☐ Satisfactory
☐ Fair
☐ Poor
☐ Unsatisfactory

OUTLET CHANNEL

Vegetation (Trees, Bushes): **Small brush on slopes**

Debris:

Channel Side-Slope Stability: **Satisfactory**

Erosion: **None**

Unusual Conditions: **Though the M.J. Simmons Dam is immediately downstream of this dam, the spillway does not flow into that dam. It flows into an adjacent drainage path and eventually into the culvert under Reed Road downstream of the M. J. Simmons dam**

Overall Condition:
☑ Satisfactory
☐ Fair
☐ Poor
☐ Unsatisfactory

LOW LEVEL OUTLET

Description: **None**

Condition:

Trash Rack:

Leakage:

Location Estimated Flow

Unusual Conditions:

Was the low-level outlet operated during the inspection?

Were there difficulties operating the low-level outlet?

When was the low-level outlet last operated and did this conform with the Operation and Maintenance Procedures?

Overall Condition:
☐ Satisfactory
☐ Fair
☐ Poor
☐ Unsatisfactory

VALVES

Description: **None**

General Condition:

Protective Coating:

Evidence of Cavitation or Abrasion:

Leakage (Yes / No?):

Frequency of Use:

Valve operated during inspection (Yes / No?):

Overall Condition:
☐ Satisfactory
☐ Fair
☐ Poor
☐ Unsatisfactory

AUXILIARY (EMERGENCY) SPILLWAY

Note: For Earthen Spillways Only. If the auxiliary (emergency) spillway is not earthen please duplicate the above sections for the primary spillway here as needed. If there are more than one earthen and/or other spillway besides the primary please duplicate the appropriate sections in this report.

Description: **No auxiliary spillway, single spillway dam**

Vegetation (Trees, Bushes):

Debris:

Channel Side-Slope Stability:

Slope Protection/Erosion:

Unusual Conditions:

Overall Condition:
- ☐ Satisfactory
- ☐ Fair
- ☐ Poor
- ☐ Unsatisfactory

EXAMINATION OF OTHER FEATURES

INSTRUMENTATION

List all instrumentation (i.e. weirs, piezometers, flow gauges):

(A separate report including instrument location, instrument readings, instrument condition, normal readings, observations, and conclusions based upon the collected data shall be attached.)

RESERVOIR

Slopes:

Sedimentation: **Appears to be minimal**

Unusual Conditions Which May Affect Dam:

Any Other Unusual Conditions:

APPURTENANT STRUCTURES (Power House, Gatehouse, Penstocks, Water Supply, Other)

Description and Condition of each: **None**

FOUNDATION AND GEOLOGY

Unusual Conditions Which May Affect Dam: **None known**

Cracks, Joints, Bedding Planes Which May Affect Dam Or Provide Seepage Paths:

CONCLUSIONS

I certify that the above dam was personally inspected by me and the conditions described herein are correct to the best of my knowledge and belief.

The following maintenance concerns should be addressed (in order of importance):

Mow or trim grass on upstream slope; Continue to remove trees and brush from downstream slope.

I recommend the following changes in maintenance:

Increase frequency of removing grass on upstream slope and tree removal on downstream slope

I recommend the following repairs be made within one year (in order of importance):

The following long-term improvements should also be undertaken (in order of importance):

Initiate plan to modify dam to meet high hazard criteria within one year

The following studies should also be undertaken (in order of importance):

Have the recommendations above included those from previous Inspections?

Yes

Does the Emergency Action Plan or the Operation and Maintenance Procedures require revision?

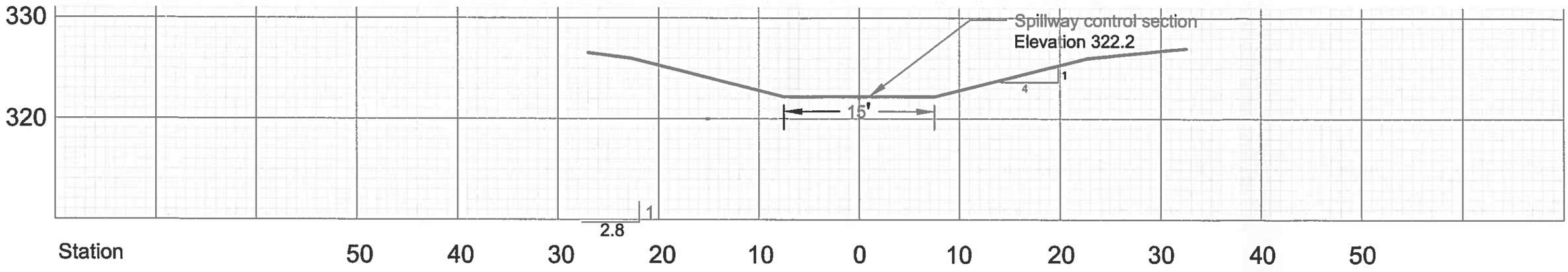
Yes – Revised with this inspection report

Mississippi Licensed Professional Engineer representing the dam owner in responsible charge of the inspection:

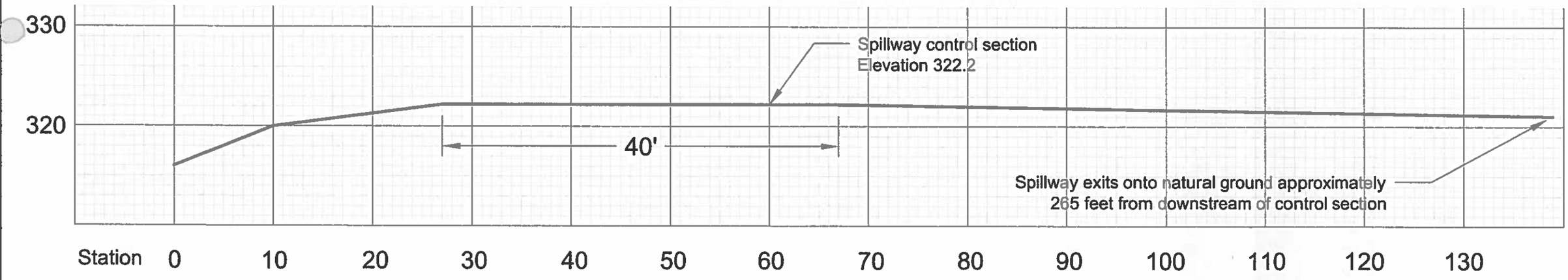
Signature John S Wilson Date 10/31/2019

JOHN S. WILSON
LICENSED PROFESSIONAL ENGINEER
7135
STATE OF MISSISSIPPI

10/31/2019



CROSS SECTION OF SPILLWAY



PROFILE OF SPILLWAY

JOHN S. WILSON, P. E., LLC 895 SWINNEA LAKE DRIVE SOUTHAVEN, MS 38672	No. / REVISIONS / Date	CHARLES HILDEBRANT DAM MS03868 DESOTO COUNTY, MS	SPILLWAY CROSS SECTION AND PROFILE	Drawn By: JSW Checked By: JSW Date: 11/05/2015 Sheet 18 of 28

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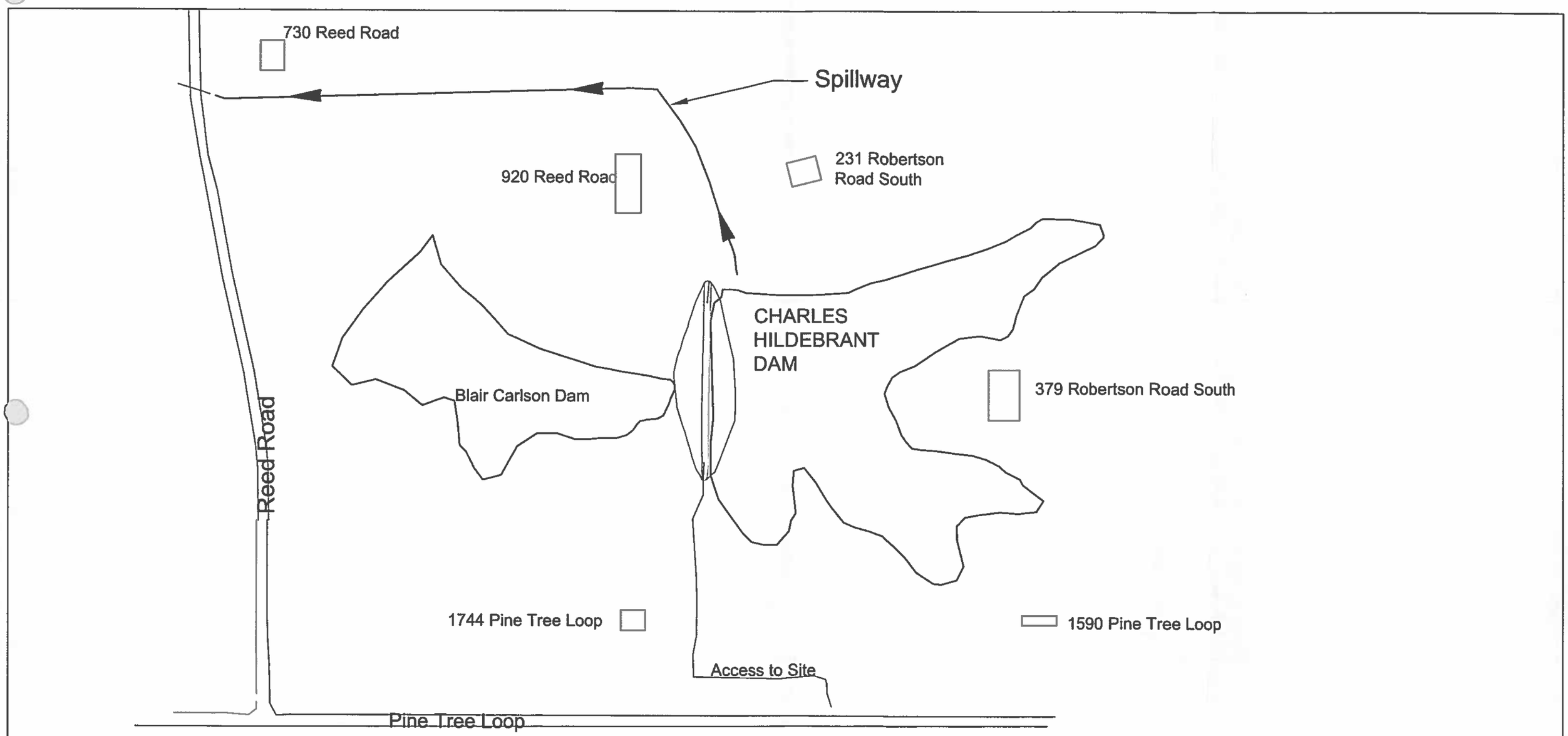
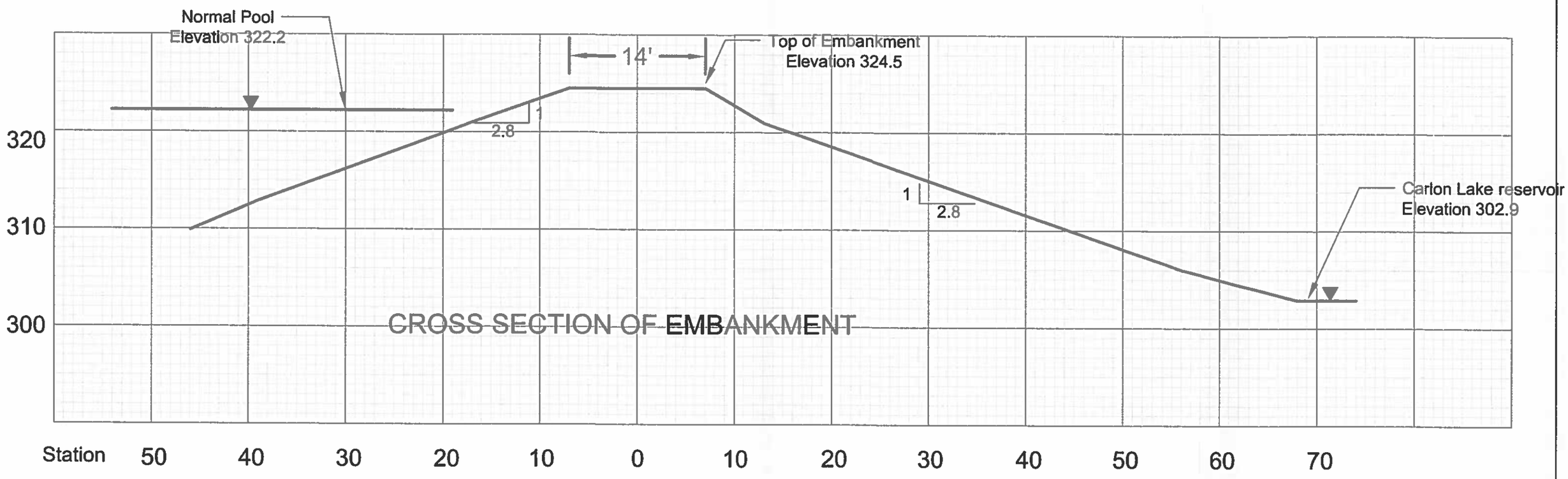


JOHN S. WILSON, P. E., LLC 895 SWINNEA LAKE DRIVE SOUTHAVEN, MS 38672	CHARLES HILDEBRANT DAM MS03868 DESOTO CUNTY, MS	SITE SKETCH

No.	REVISIONS	Date

Drawn By: JSW | Date: 11/20/15
Checked By: JSW | Sheet 15 of 28



CROSS SECTION OF EMBANKMENT

Note: Upstream and downstream slope ratios vary, average shown
Downtstream toe of dam is upper reservoir of Carlson dam reservoir

JOHN S. WILSON, P. E., LLC 895 SWINNEA LAKE DRIVE SOUTHAVEN, MS 38672	No. / REVISIONS / Date	HILDEBRANT LAKE DAM MS03868 DESOTO COUNTY, MS	CROSS SECTION OF EMBANKMENT	Drawn By: JSW Checked By: JSW
				Date: 11/05/2015 Sheet 17 of 28

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SITES SUMMARY OUTPUT TABLE
HILDEBRANT DAM
MS03868

	PMP	.75 PMP
Site Identification	1	1
Watershed Runoff Curve Number	74.	74.
Total Watershed Drainage Area (Sq.Miles)	0.06	0.06
Watershed Time of Concentration (Hours)	0.20	0.20
SDH Rainfall Total (Inches)	N/A	N/A
SDH Rainfall Duration (Hours)	N/A	N/A
FBH or Storm Rainfall Total (Inches)	40.40	30.30
FBH or Storm Rainfall Duration (Hours)	24.0	24.0
SDH Inflow Peak (CFS)	N/A	N/A
FBH or Storm Inflow Peak (CFS)	308.3	227.7
Initial Reservoir Elevation (Feet)	322.30	322.30
Maximum WS SDH (Feet)	N/A	N/A
Maximum WS FBH or Storm (Feet)	325.10	324.50 *
Storage at Max. WS FBH or Storm (Acre-Ft)	30.1	23.3 **
Top Dam (Feet)	N/A	N/A
Storage, Top Dam (Acre-Ft)	N/A	N/A
Emb. Yardage (CY)	N/A	N/A
PSH Drawdown (Days)	N/A	N/A
378 Drawdown (Days)	N/A	N/A
PS Crest (Feet)	322.20	322.20
PS Number of Conduits	N/A	N/A
PS Conduit Diameter (Inches)	N/A	N/A
PS Conduit Height (Feet)	N/A	N/A
PS Conduit Width (Feet)	N/A	N/A
PS Conduit Area (Sq. Feet)	N/A	N/A
Storage, PS Crest (Acre-Ft)	N/A	N/A
PS Discharge at AS Crest (CFS)	N/A	N/A
PS Discharge for SDH (CFS)	N/A	N/A
PS Discharge FBH or Storm (CFS)	230.8	163.7
AS Crest (Feet)	322.20	322.20
Storage, AS Crest (Acre-Ft)	N/A	N/A
AS Width (Feet)	N/A	N/A
AS Exit Slope (%)	N/A	N/A
AS Ret. Curve Index	N/A	N/A
AS Veg. Cover Factor	N/A	N/A
AS Maintenance Code	N/A	N/A
AS Max. Head SDH (Feet)	N/A	N/A
AS Peak Discharge SDH/Storm (CFS)	N/A	N/A
AS Exit Velocity SDH or Storm (Ft/S)	N/A	N/A
AS Stress SDH or Storm (Lb./Sq.Ft.)	N/A	N/A
Hp FBH or Storm (Feet)	2.90	2.30
AS Peak Discharge FBH/Storm (CFS)	0.	0.
AS Integ. Dist. FBH or Storm (Feet)	N/A	N/A
Oe/B FBH or Storm (Acre-Ft/Ft)	N/A	N/A
Uncontrolled Drainage Area (Sq.Miles)	0.06	0.06
Number of Errors	0	0
Number of Warnings	0	0

* Maximum water elevation with 75% PMP - Top of Dam = 324.5
** Spillway rating starts at spillway elevatin of 322.2. Total storage = field measured storage of 56 acre-feet + 23.3 acre-feet = 79.3 acre-feet

SITES RATING TABLE
HILDEBRANT DAM
MS03868

RATING TABLE NUMBER 2

	ELEV. FEET	Q-TOTAL CFS	Q-PS CFS	Q-AUX. CFS	VOLUME AC-FT	AREA ACRE
1	322.20	0.00	0.00	0.00	0.00	8.90
2	323.00	33.40	33.30	0.10	7.48	9.80
3	324.00	112.50	112.30	0.20	17.68	10.60
4	325.00	218.20	217.90	0.30	28.83	11.70
5	328.00	649.90	649.50	0.40	67.83	14.30
6	330.00	1013.50	1013.00	0.50	98.33	16.20

ROUTING OF STORM HYDROGRAPH STARTS AT ELEVATION 322.30

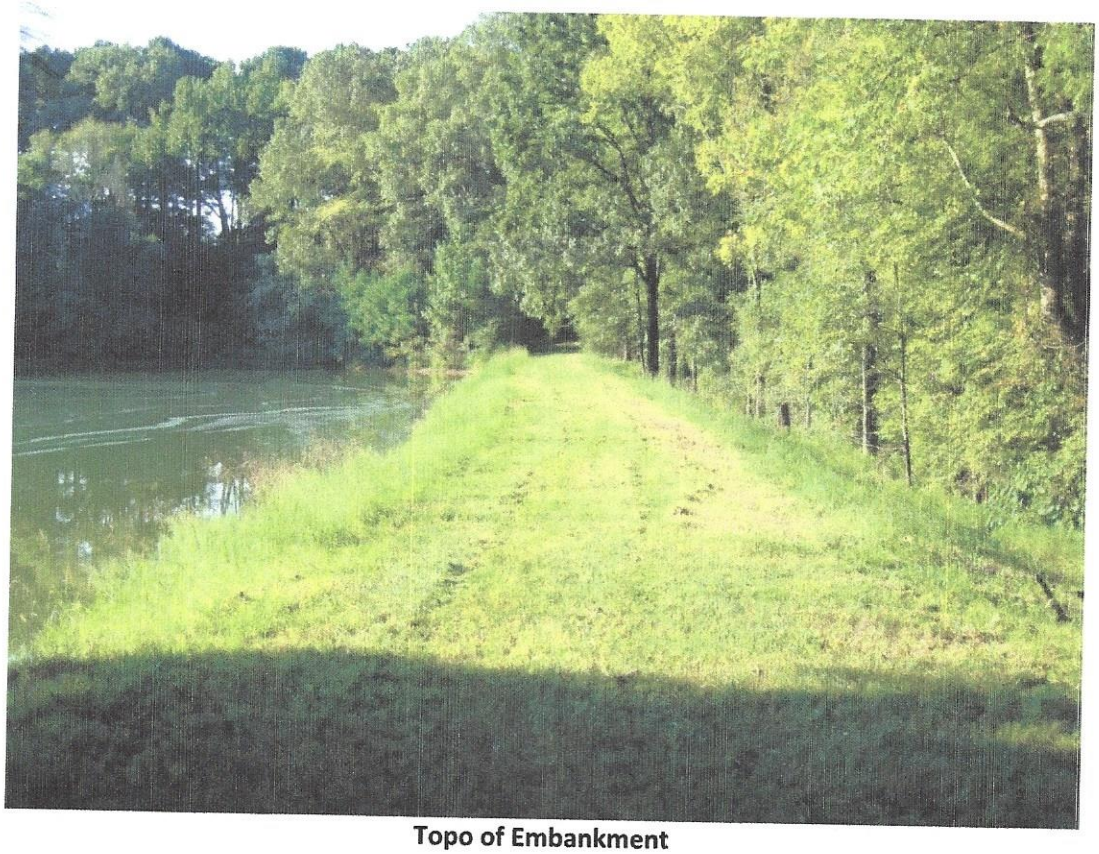
ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	AUX.-HP FT	VOL-AUX. ACFT
STORM HYD	0.0	324.50	23.1	11.1	2.30	23.1

******* MESSAGE - ROUTING ONLY: NO AUXILIARY SPILLWAY ANALYSIS**

PEAK - CFS	Q-PS	Q-AUX.	Q-TOT.
DISCHARGE =	163.7	0.2	164.0

NOTE: Rating analysis begins at normal pool (spillway) elevation of 322.2
Field measured storage at normal pool elevation = 55 acre-feet
Total reservoir storage at normal pool elevation = 55+23.1 = 78.1 acre-feet
Surface area at normal pool elevation = 8.9 acres
Surface area at top of dam elevation of 324.5 = 11.1 acres

PICTURES 10/2019



Topo of Embankment

Upstream slope

PICTURES 10/2019

Downstream Slope

Downstream slope

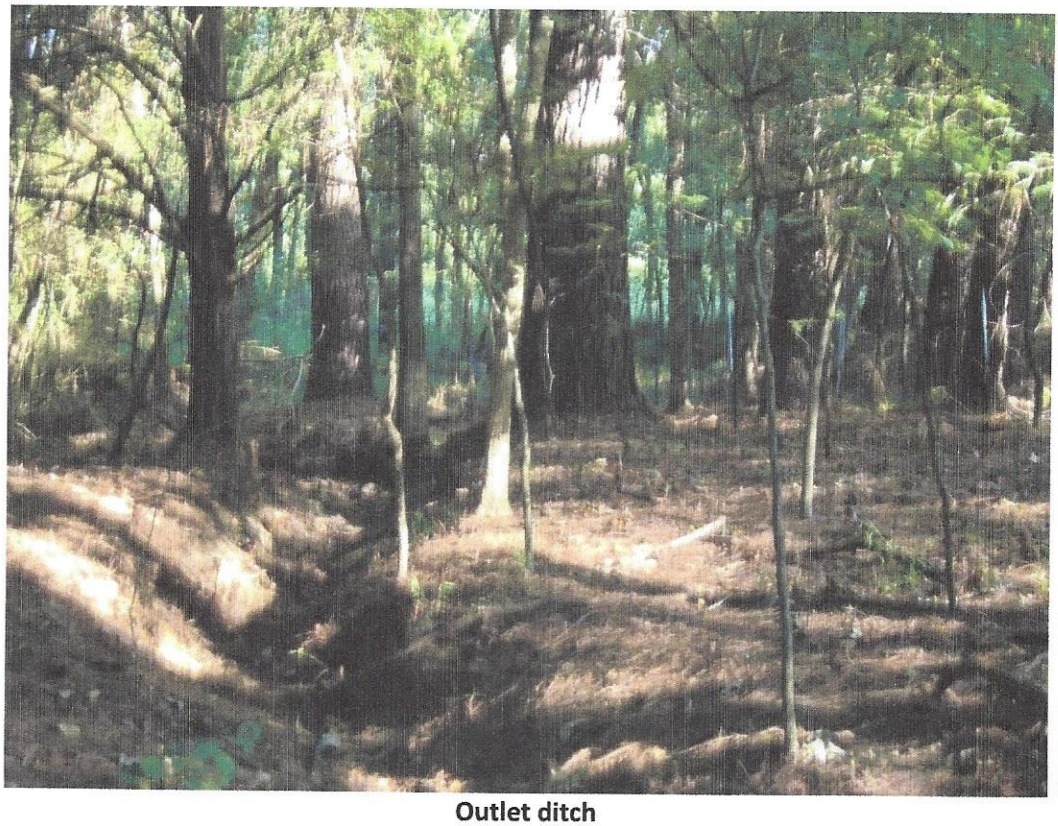
PICTURES 10/2019

Spillway entrance

Spillway control section

PICTURES 10/2019

Spillway outlet



Outlet ditch

INSTRUCTIONS FOR COMPLETING THIS FORMAL INSPECTION CHECKLIST

1. **Complete all items that are applicable; if not applicable, write in "N/A".**

2. Use the next page to determine ratings of each dam component.

3. Please either type or write legibly and concisely.

4. The inspection personnel shall review the "Guidelines for Inspection of Dams" available on the MDEQ website prior to conducting the inspection. Failure to comply with the requirements of this guideline may result in the inspection being rejected by MDEQ.

5. If the ratings of the components of the dam have changed since the last inspection, please explain the change in condition under the appropriate section. If a rating has improved, dam repairs, improvements, analyses, or maintenance must have been performed and documented.

6. The inspection report including this form shall be submitted to MDEQ including pictures in an appendix section.

7. Please sign and date this page in the space below to verify that you have read and understand these instructions.

Inspector's Signature: John S Wise Date: 10/31/2019

GUIDELINES FOR DETERMINING CONDITIONS

CONDITIONS OBSERVED - APPLIES TO UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, PRINCIPAL SPILLWAY, AUXILIARY SPILLWAY

SFACTORY	FAIR	POOR	UNSATISFACTORY
In general, this part of the structure has a good appearance, and conditions observed in this area do not appear to threaten the safety of the dam.	Although general cross-section is maintained, surfaces may be irregular, eroded, rutted, spalled, or otherwise not in like new condition. Conditions in this area do not currently appear to threaten the safety of the dam.	Continued deterioration and/or unusual loading may threaten the safety of the dam.	Conditions observed in this area appear to threaten the safety of the dam. Conditions observed in this area are unacceptable.

CONDITIONS OBSERVED – APPLIES TO SEEPAGE

SATISFACTORY (NONE)	FAIR	POOR	UNSATISFACTORY
No evidence of uncontrolled seepage. No unexplained increase in flows from designed drains. All seepage is clear. Seep- age conditions do not appear to threaten the safety of the dam.	Some seepage exists at areas other than the drain outfalls, or other designed drains. No unexplained increase in flows from designed drains. All seepage is clear. Seepage conditions observed do not currently appear to threaten the safety of the dam.	Excessive seepage exists at areas other than drain outfalls and other designed drains. Seepage needs to be evaluated. Increased flow and/or continued deterioration in seepage conditions may threaten the safety of the dam.	Excessive seepage conditions observed appear to threaten the safety of the dam and is unacceptable. Examples: 1) Designed drain or seepage flows have increased without increase in reservoir level. 2) Drain or seepage flows contain sediment. i.e., muddy water or particles in jar samples. 3) Widespread seepage, con-